Unit-2 Mastery Assessment (version 603)

Question 1 (10 points)

Let f represent a function. If $f[46] = 9$, then there exists a knowable solution to the equation below.

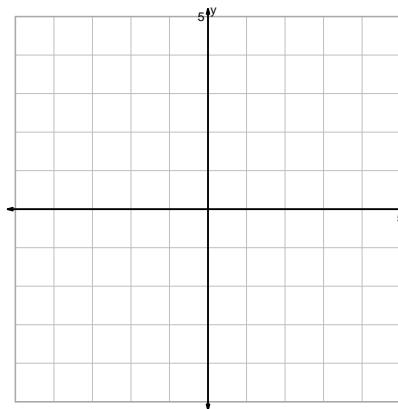$$y = 10 \cdot f[2x + 4] - 43$$
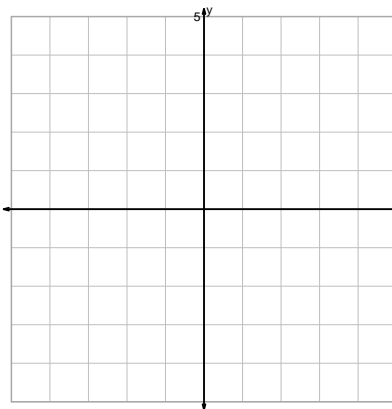
Find the solution.

$x =$

$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.
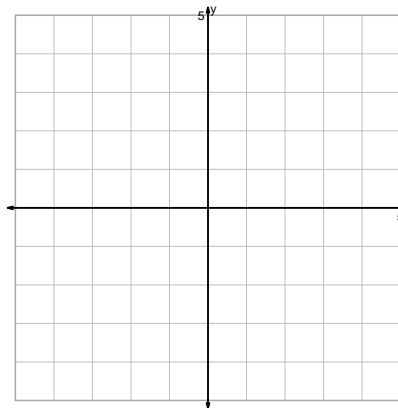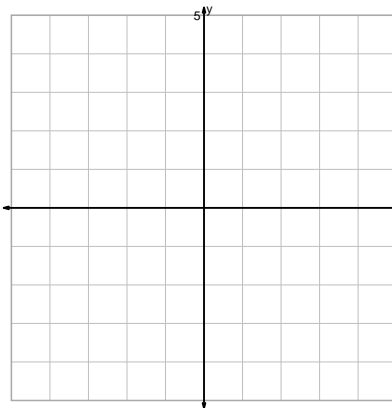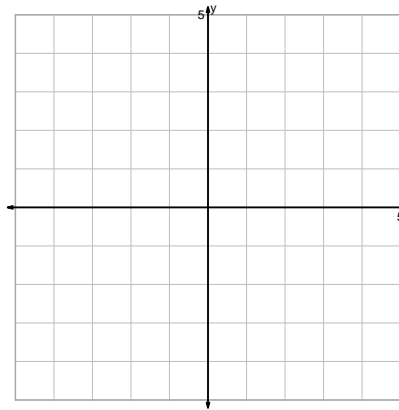
$y = -\sqrt{x}$
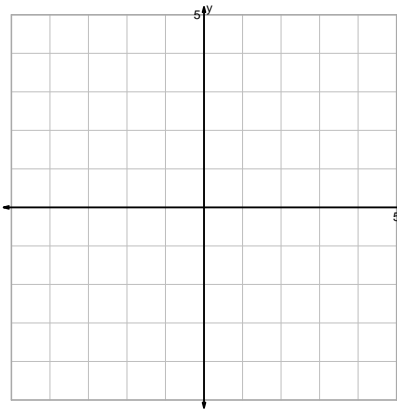
$y = 2^{-x}$

$y = x^3 - 2$

$y = \dfrac{x^2}{2}$

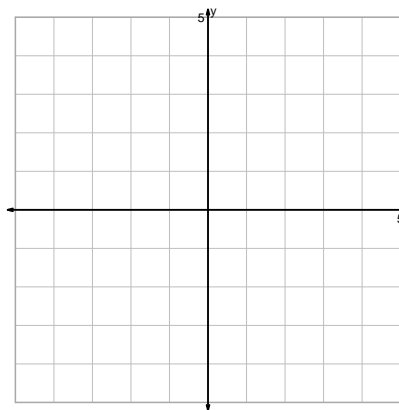$y = \sqrt[3]{\dfrac{x}{2}}$

$y = \log_2\left(2x\right)$

$y = \sqrt[3]{x+2}$
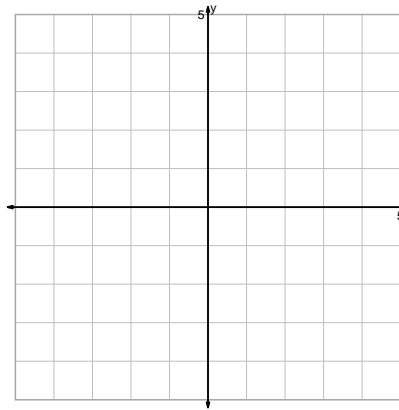
$y = \left(x-2\right)^2$
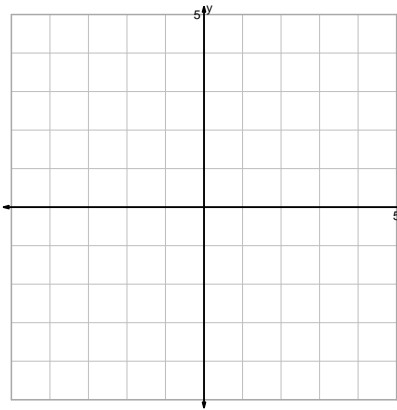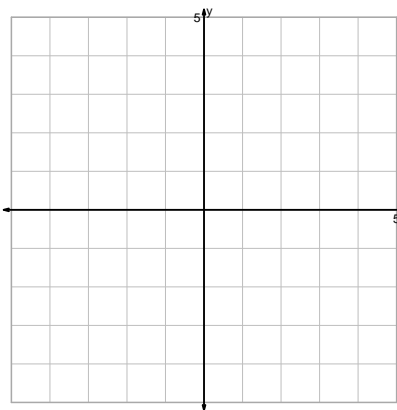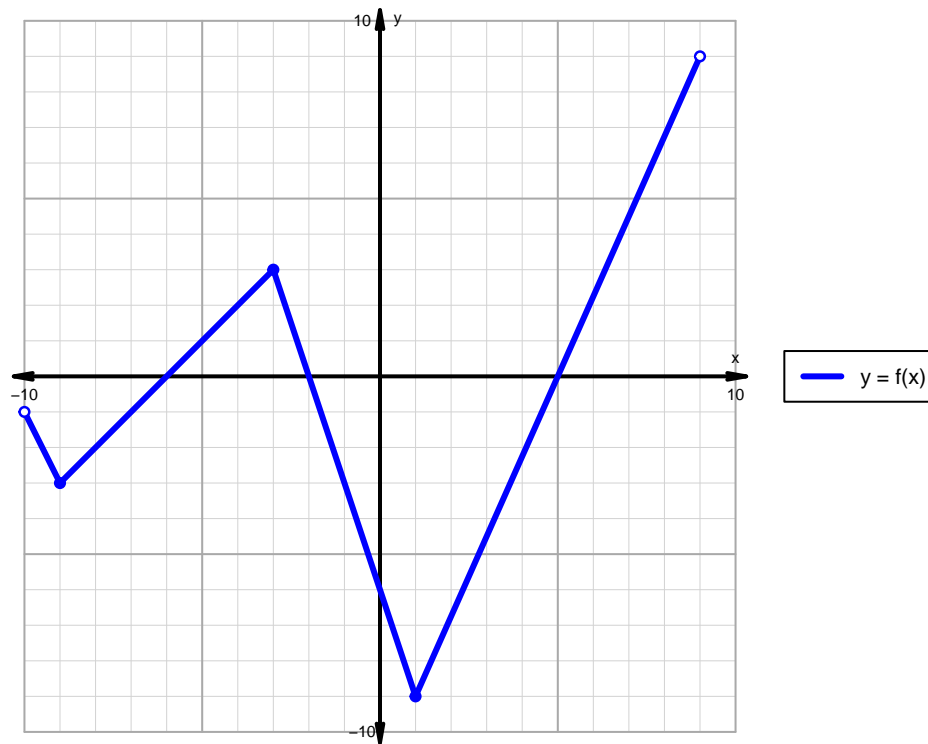
$y = 2 \cdot 2^x$

$y = x^3 + 2$

Question 3 (20 points)

A function is graphed below.

Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

3

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = 2 \cdot (f[5(x+4)] + 3)$ are represented below in a table and on graphs.

a	b	x	y
-95	14	-23	34
-80	-48	-20	-90
-50	-10	-14	-14
65	-44	9	-82

$b = f[a]$

$y = 2 \cdot \left(f\left[5\left(x + 4 \right) \right] + 3 \right)$
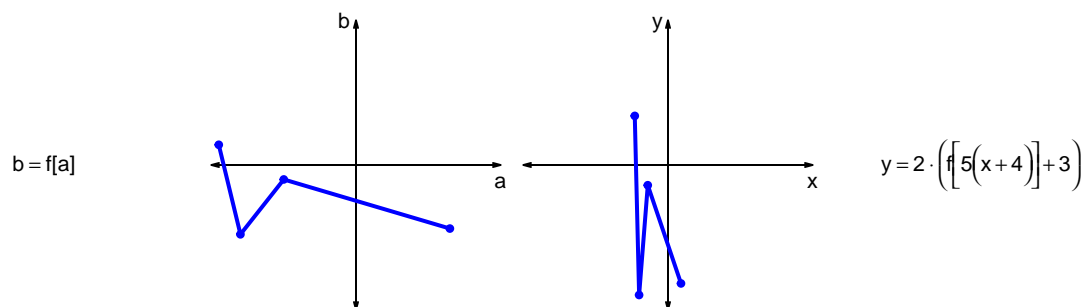
a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 2 \cdot (f[5(x+4)] + 3)$?

4

Question 5 (10 points)

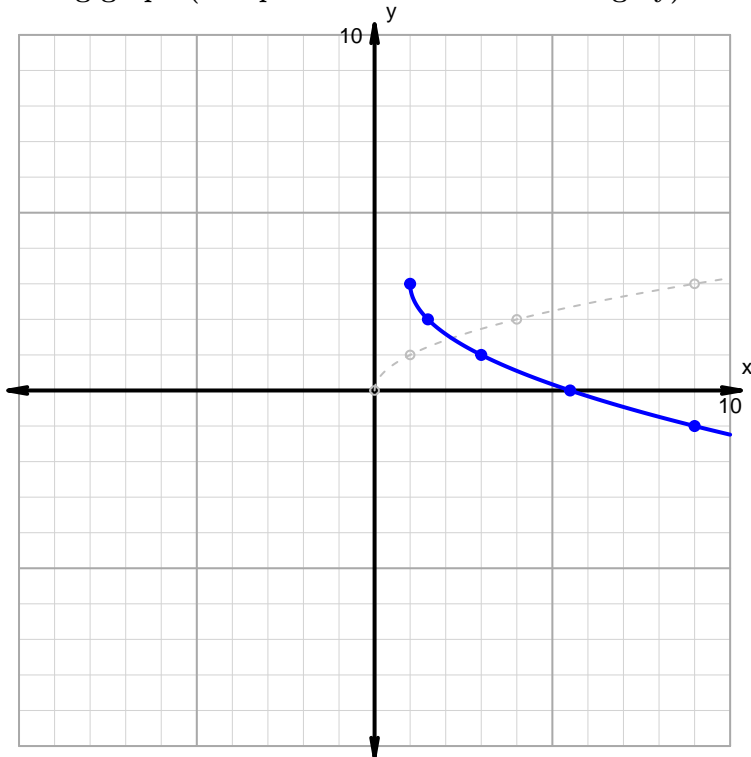A parent square-root function is transformed in the following ways:

Horizontal transformations

1. Horizontal shrink by factor 2.
2. Translate right by distance 1.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate up by distance 3.

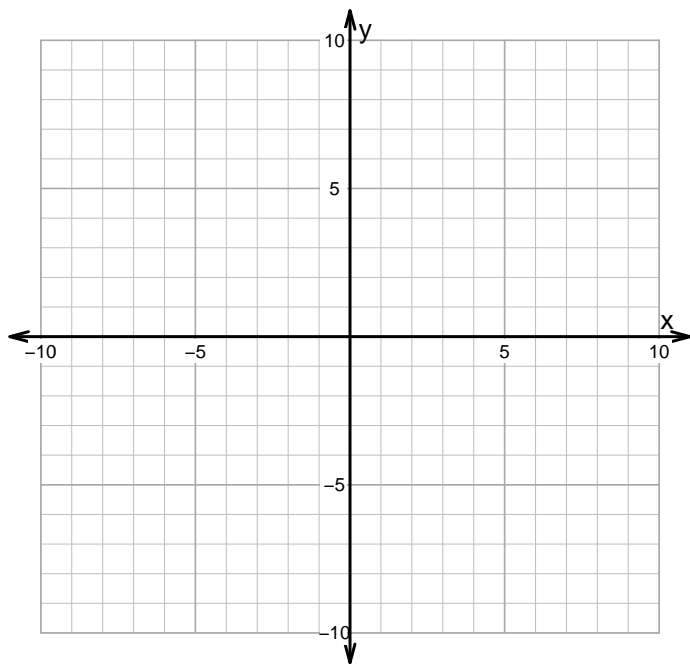**Resulting graph (and parent function in dashed grey):**

- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = -2 \cdot |x + 1| + 2$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	